

Instruments and Equipment

USSR

INYUSHIN V., Docent, Candidate of Biological Sciences, and CHEKUROV, P.,
Chief Doctor, Republic Clinical Hospital, Candidate of Medical Sciences

"The Laser in Medicine"

Alma-Ata, Kazakhstanskaya Pravda, 9 Jul 72, p 4

Abstract: Certain zones of skin tissue, "points of influence," have definite ties with specific internal organs. The biophysical properties of these zones and methods of stimulating them are being studied. Acupuncture has therapeutic effect in the treatment of peripheral nervous disorders, allergies, and trophic and secretory disturbances. Therapeutic and diagnostic applications of the laser on these zones are being studied; instruments to locate the zones are being developed. Experiments with animals have proven the safety of laser zone irradiation. The laser has proven effective in treatment of stomatological illnesses. A laser microscope, capable of observing cell functions which give information on the condition of the tissue, has been built.

1/1

therapy

USSR

UDC 615.849.19.036.8

INYUSHIN, V. M., Kazakh State University imeni S. M. Kirov, Alma-Ata

"Biological Effects of Monochromatic Red Light of Lasers and Their Prospective Use in Physiotherapy"

Moscow, Voprosy Kurortologii, Fizioterapii i Lechebnoy Fisicheskoy Kul'tury, No 1, 1972, pp 25-28

Abstract: Experiments with animals (white rats, cats) showed that the monochromatic red light produced by helium-neon lasers at wavelengths of 6300-6500 Å and intensities of 0.2-2 mW/cm² per second accelerated to some extent erythropoiesis in the bone marrow and to a lesser extent the production of white blood. The spleen in these animals was filled with hemolyzed erythrocytes and with an increased number of young lymphocytes 24 hr after laser light irradiation. The monochromatic polarized laser red light accelerated the regeneration processes in rabbits subjected to skin transplants and stimulated healing processes in animals with radiation sickness. The histophysiological studies showed that coherent laser radiation is characterized by higher physiological activity in comparison with noncoherent radiation of the same intensity. The activity of the thyroid and adrenal glands was stimulated 3 days after irradiation with red laser light of low intensity of experimental animals. This stimulation was higher when polarized and coherent radiation

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USSR

INYUSHIN, V. M., Voprosy Kurortologii, Fizioterapii i Lechebnoy Fisicheskoy Kul'tury, No 1, 1972, pp 25-28

was used. The clinical data obtained from patients with hypertension showed that from 80-90% of them showed a marked improvement after 20 days of treatment with red polarized laser light (the neck area was irradiated). Some biochemical and physiological studies indicated that red laser light decreases the coagulating properties of the blood and the cholesterol level but increases the total blood serum protein in patients with hypertension. Some shifts in mineral metabolism were also observed in the same patients. The concentration of K in the blood plasma and of erythrocytes increased, while the concentration of Na remained unchanged.

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USSR

UDC: 621.396.677

MEL'YANOVSKIY, P. A., INYUTIN, G. A.

"On the Investigation of Mutual Coupling in Wide-Band Antenna Arrays"

V sb. Antenny (Antennas--collection of works), Vyp. 9, Moscow, "Svyaz'", 1970, pp 13-23 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12B44)

Translation: The authors analyze the parameters of an antenna array which characterize the mutual coupling between radiators, and discuss methods of measuring these parameters. Data are given from measurements of mutual impedances of wide-band dipoles. Eight illustrations, bibliography of five titles. Resumé.

1/1

AA0040645

I

Inventing, I.S.

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, /-70

242367 ESTABLISHING RESISTANCE PROBES, e.g. in the surface of articles made from thermoplastics materials, involved the embedding of wire gauge in the surface layer of the article concerned, but this was found to lead to some collapse of the original structure of the plastics surface. To improve the method for inserting the wire resistance probes, it is suggested that the wire gauge should be heated to a temperature higher than the melting temp. of the material from which the article is made, and the gauze is then embedded in the surface layer of the article using a tool, the temp. of which is lower than the melting point of the plastic. Heating of the wire gauze can be done with an electric current. 25.1.67. as 1129737/23-5, BELYI, V.A. and others Belorussian Acad. of Sciences. (2.9.69) Bul. 15/25.4.69. Class 39a² Int. Cl. B 29c.

19750222

AA0040645

AUTHORS: Belyy, V. A.; Inyutin, I. S.; Sysoyev, P. V.; Kupchinov,
B. I.; and Kukhareenko, L. B.

Otdel Mekhaniki Polimerov AN Belorusskoy SSR

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7/7

Epidemiology

USSR

ZAIROV, K. S., CHICHELIN, P. I., MUKHAMADOV, S. M., PULATOV, YA. G., IL-GVANO-KHVA, INZILVAIOVA, K. M., ARTYKOV, K. A., and SEREDIN, V. G.

"Methods and Tactics to be Applied in Detecting Local Foci of Cholera"

Tashkent, Meditsinskii Zhurnal Uzbekistana, No 12, Dec 71, pp 3-7

Abstract: With the appearance of the El Tor variety of cholera, endemic foci of this disease developed in a number of countries in which classical cholera could not take root. The reason for this is the capacity of El Tor vibrios to survive for prolonged periods of time in the human organism and the environment. Local cholera foci come developed in which the circulation of the agent is sustained by a chain of atypical diseases, prolonged carrier state of the vibrios in humans, and possibly transmission of the infection by aquatic organisms. Discovery of the carrier state among persons with diseases of the bile excretion system led A. G. Nikonov (1959) to the conclusion that cholera vibrios may be retained for a long time in the gall bladder. He proved the existence of this conclusion experimentally. During the recent outbreak of cholera, when an epidemic focus developed in the city of Tashkent, in cases of cholera, which is caused by sensitive vibrios, the role of the gall bladder in the retention of the vibrios is of great importance. The authors of this paper, for the first time, have shown that in the case of cholera, the vibrios are retained in the gall bladder for a long time.

USSR

ZAIROV, K. S., et al., Meditsinskij Zhurnal Uzbekistana, No 12, Dec 71, pp 3-7

of meat broth cultures. The complement fixation reaction, which has been used as an immunological test for cholera in Russia since 1909, has been forgotten for inadequate reasons. The very small amount of cholera vibrios present in the stool of cholera patients and vibrio carriers can be detected by means of suspended antibodies, among which alizarin, indanthrone, and anthragallo antibodies are used most frequently. Concentration of cholera vibrios on membrane filters follows by supplementary cultivation (Ye. V. Chibrikova, 1960, 1962) made it possible to increase greatly the sensitivity of the immunofluorescence method of detection. A. K. Adanov et al (1969) isolated El Tor vibrios from fish caught in rivers of Turkmenia. According to results obtained by the authors of this article, cholera vibrios may be detected in the intestines of fish even when tests on the water in which the fish have been caught are negative. Testing of fish is therefore recommended as a method for the detection of latent foci of cholera in bodies of water.

2/2

Microbiology

USSR

SEREDIN, V. G., INZHEVATOVA, M. V., MUKHAMEDOV, S. M., RIVKUS, Yu. Z., and
BYSTRYY, N. F., Uzbek Anti plague Station

"Testing Cholera Phage With a 'Stamp'"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 11, 1971, pp 75-77

Abstract: The "stamp" is a device to study a number of cholera vibrio strains at the same time. It consists of five aluminum plates connected by cross-pieces. Each plate has five short pins whose distal ends are working surfaces to which phages are applied. The phages to be tested are diluted in test tubes to 10^{-4} and poured into special plates (0.5 to 0.5 ml of each dilution) containing wells arranged in 5 rows of 5 wells each corresponding to the number of pins on the "stamp." The "stamp" is immersed with the pins in alcohol in a Petri dish and heated over an alcohol lamp. It is then dipped into the wells with phage and an impression made on the surface of 0.7% soft agar with the culture under study. After the drops of phage dry, the dishes are incubated for 18 hours. A laboratory technician should be able to apply phage to 300 to 400 dishes in 3 hours.

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Epidemiology

USSR

CHICHENIN, P. I., MUKHAMEDOV, S. M., SEREDIN, V. G., INZHEVATOVA, M. V., and
LI GVAN KHVA, V. T.

"Contribution to the Taxonomy of El Tor Vibrios"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 9, Sep 70, pp 42-46

Abstract: During the last 50 years, no agreement has been reached on the true cholera vibrio. Feeley, who studied 220 strains, divided them into five biotypes. However, since all were true cholera vibrios, he regarded the division into the classic cholera vibrios and the El Tor vibrios as invalid. The classification into lysogenic and nonlysogenic strains does not correspond to their virulence. The varying susceptibility of the vibrios to bacteriophages facilitated determination of the geographic distribution of lysogenic El Tor vibrios. Since no classification has been officially approved, it is apparent that there is only one cholera pathogen: *Vibrio cholerae*. The dissimilarities among its variants lie within the limits of genus variability. They all have one common property: they cause cholera in man. Vaccines made with the classic cholera vibrios are effective against El Tor vibrios. In addition to the dissimilarities, there are some biological dissimilarities between classical and El Tor vibrios. The El Tor vibrios survive longer in the external environment, especially in

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USSR

CHICHENIN, P. I., et al, Meditsinskiy Zhurnal Uzbekistana, No 9, Sep 70, pp 42-46

water, and are more resistant to antibiotics. Contrary to the classic type, they are all prototrophic. The great vitality of the El Tor vibrios is manifested by their interaction with the classic type in vitro and in vivo. However, no explanation has yet been found for the fact that the El Tor cholera which developed in India in March-April 1964 almost completely displaced the classic cholera. People can carry El Tor vibrios for many years. The ability to produce endemic foci is greater for the El Tor than for classic vibrios. Staple endemic situations induced by El Tor vibrios have recently been observed in the Philippines, Vietnam, Thailand, and Indonesia.

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Water Treatment

USSR

UDC 632.954.2:628.35

DUDNIKOVA, R. V., IOAKIMES, E. G., KOVAL'CHUK, A. N.

"Biochemical Purification of the Waste Water from Pesticide Production"

Moscow, Khimicheskaya Promyshlennost', No 5, 1971, pp 340-344

Abstract: An industrially feasible system for effectively purifying the waste water from the production of some pesticides is outlined. It utilizes aeration and biochemical action to lower the biological consumption of oxygen rating from about 600 to about 20 mg of oxygen per liter. The process is currently in operation in a plant which produces 2,4,-dichlorophenoxyacetic acid, its esters and amine salts, copper trichlorophenoxide, hexachlorobutadiene, 2,4,5-trichlorophenoxyacetic acid, 2-methyl-4-chlorophenoxyacetic acid, and others.

1/1

USSR

IOANNESYAN-ZVERKOVA, B. I., Institute of Experimental Medicine,
Academy of Medical Sciences USSR, Leningrad

"Changes in the Immunological Reactivity of the Organism
Under Conditions of Physiological Stress and the Action of
Harmful Factors," pp 106-114

Abstract: Data on shifts in total immunological and physiologi-
cal reactivity of the organism to stress conditions, environ-
ment, and harmful occupational factors are cited in the article.
The method is based on intracutaneous injection of a serum con-
taining antibodies specific to proteins, and was developed by
Ioffe, V. I. during the siege of Leningrad in response to the
need for a rapid and simple method of determining shifts in
immunogenesis under unfavorable conditions. The effect of
stress on the immunological reactivity with partus as an
example, was studied in 1,000 women. It was found that the
total immunological reactivity dropped considerably by the 4th
day after the birth, the period when complications, hemorrhaging
in particular, may develop.

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USSR

IOANNESYAN-ZVERKOVA, B. I., "Changes in the Immunological Reactivity of the Organism Under Conditions of Physiological Stress and the Action of Harmful Factors," pp 106-114

The effect of environmental factors on total immunological response was studied in schoolchildren from different parts of a specific area. It was established that the level of total immunological response was reduced in children from regions with polluted atmospheres.

Tests were conducted also on people working with chemicals, such as carbon disulfide, lead, and mercury, people working in foundries, and people who in the course of their activities are subjected to the protracted action of small doses of ionizing radiation. In all of these cases a marked decline in the level of total immunological response and physiological reactivity was noted.

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USSR

UDC 621.791.754

(3)

RABKIN, D. M., Doctor of Technical Sciences, ISHCHENKO, A. YA., Candidate of Technical Sciences, IGNIAT'YEV, V. G., Candidate of Technical Sciences, LOZOV-SKAYA, A. V., Candidate of Technical Sciences, SAYENKO, M. I., Engineer, Electric Welding Institute imeni Ye. O. Paton of the Academy of Sciences UkrSSR, KOZLOVSKAYA, V. P., Candidate of Technical Sciences, and IODA, M. V.,
[expansion unknown]

"Influence of Admixtures on the Mechanical Properties of Joints of 1201 Aluminum Alloy"

Kiev, Avtomaticheskaya Svarka, No 7(244), Jul 73, pp 53-55

Abstract: Mechanical test results of joints of aluminum alloys, 1201 type (0.15% Fe, 0.12% Si) and 01203 type (0.003% Fe, 0.02% Si), are discussed by reference to curves of the effect of temperature on the strength of the initial metal and the joint and of the effect on the relative elongation of the initial metal. The decrease of the total Fe and Al content to 0.06% in alloys of Al-Cu type improves the mechanical properties of the initial metal and of welded joints at normal temperature. The relative elongation, impact ductility, and the angle of bend of the initial metal and of joints of 01203 alloy are ~ 1.5 times higher than on 1201 alloy. The mechanical properties of both alloys

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USSR

RABKIN, D. M., et al., Avtomaticheskaya Svarka, No 7(244), Jul 73, pp 53-55

improve with decreasing temperature. At liquid He temperature, the resistance to rupture of the initial metal and of joints of 01203 alloy are somewhat higher than on 1201 alloy and the relative elongation of the initial metal is two times higher. Three figures, one table, four bibliographic references.

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Power

USSR

UDC 621.311.22/.23.001.12

TROITSKIY, A. A., ALEKSEEV, I. A., IODIDIO, E. A., Engineers

"Planning and Designing High-Power Condensation Electric Power Plants"

Moscow, Teploenergetika, Russian, No 5, 1971, pp 4-10

Abstract: A study is made of the problems of planning and designing high-power condensation electric power plants. The selection of the optimal power of individual units and the condensation electric power plant itself, the equipment of the main building, the arrangement of the equipment and the technical-economic indexes of condensation electric power plants are discussed. Layouts of the plant itself as well as schematics of individual units and technical specifications for the plants and units are presented.

Considering the proposed new technical solution, the construction of condensation electric power plants with 800 megawatt units operating on gas and fuel oil will make it possible to reduce the specific heat consumption by 4-5% and the specific capital investments by 10-15% as compared to condensation electric power plants equipped with 300 megawatt units. In order to attain these economic effects, it is necessary to redevelop or modernize individual

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USSR

TROITSKIY, A. A., et al., Teploenergetika, Russian, No 5, 1971, pp 4-10

groups of basic equipment and also to develop and introduce new types of auxiliary equipment and new arrangements of the main building. The necessary refinement in the assignments for equipment development for series gas-oil units have already been introduced to a large extent, and they will be brought into further accord with the manufacturing plant as a result of investigation of the work of the All-Union State Institute for the Planning of Electrical Equipment for Heat Engineering Structures by the Technical Council of the USSR Ministry of Power Engineering. Further improvement of the indexes of condensation electric power plants can be achieved by improving the heat economy of the turbine, lowering the calculated hydraulic and aerodynamic drag of the boiler and the high-pressure heater and improving the efficiency of the auxiliary machinery. The conclusions drawn with respect to composition and technical specifications are based on both Soviet and foreign experience.

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USSR

UDC: 621.4.001.12

TROITSKIY, A. A., ALEKSEYEV, I. A., IODIDIO, E. A.

"Main Trends In Thermal Power Engineering"

Moscow, Teploenergetika, No 4, Apr 71, pp 4-6

Abstract: In the current decade the construction of a number of large condensation thermal power stations with power units on the order of 500, 800, 1200 Mw, and also heat-and-electric power plants with power units up to 250 Mw are planned. The transition to the construction of superpower heat-and-electric power stations with the installation of especially large units must depend upon technical solutions which provide for a decrease in the unit cost of equipment, construction-assembly costs, expense of generating electrical power, and an increase in labor productivity. At the beginning of the next decade, the United European Power System will join in the parallel work of installing approximately 200 million kw of power. According to the specifications of its development in the period up to 1985, the construction of heat-and-electric power plants with 6 million kw and more power will be possible. According to plans the power of individual electric power stations in Siberia using inexpensive coal and electric power transmission lines of 1500 kv and higher will comprise approximately 10 million kw.

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USSR

TROITSKIY, A. A., et al, Teploenergetika, No 4, Apr 71, pp 4-6

Scientific research and planning for artificial cooling systems including towers with 65-100 m³/hr capacity (one tower for an 800-1200 Mw unit) are being stepped up. Methods are being sought for more economically effective methods of enriching fuels and cleaning stack gases of ash and sulphur dioxide. It is noted that by enlarging power units and power stations the number of staff personnel can be reduced 60%. Also the transition to larger power units and stations can reduce the cost of electrical power. Along with the construction of electric power stations using organic fuel, the advantageous development of nuclear power stations is noted. Gas-turbine power installations up to 100 Mw which incorporate simple design, high maneuverability, and quick starting, and with a capital investment less than two times that of steam turbine units will be used to supplement peak load periods. After 1980 large power magnetohydrodynamic generators with high-temperature superstructures combined with thermal power installations may be expected; the efficiency of such systems is expected to be 50-55%.

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- END -

6022

CSO: 1850 W

USSR

UDC 669.046.5

IODKO, E. A., MORGUNOV, A. V., and YAVOYSKIY, V. I.

"Concerning the Problem of Nonmetallic Impurities Distribution in Killed Steel Ingots"

Moscow, V sb. "Sovremennyye problemy kachestva stali" (MISiS). (Collection of Works. Modern Problems of Steel Quality) (Moscow Institute of Steel and Alloys), Izd-vo "Metallurgiya," No 61, 1970, pp 48-51

Translation of Abstract: Data are presented on a study of primary nonmetallic impurities distribution in ingots. The study was made on a physical model at various ratios of geometrical dimensions. Two figures, two refs.

1/1

USSR

UDC: 681.3

KORSHUNOV, Yu. M., STEPASHKIN, A. I., VAKARIN, I. A., IOFA, A. L.,
MOLCHADSKIY, L. I., STEPANENKO, V. N., EMIKH, L. A.

"A Digital Spectral Analyzer"

Tr. Ryazan. radiotekhn. in-ta (Works of the Ryazan Radio Engineering
Institute), 1970, vyp. 29, pp 158-168 (from RZh-Kibernetika, No 9,
Sep 71, Abstract No 9V554)

Translation: The paper describes a model of a specialized digital com-
puter device designed for studying the frequency make-up of random
signals. Expressions are presented for estimating the basic parameters
of the device under various operating conditions. Authors' abstract.

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$$k = 0, 1, 2, \dots, \text{ and } k = 1, 2, \dots, \text{ respectively.} \quad (9a, b)$$

A. M. Antonov and I. M. Yablonskiy, Vysokomol. Soedin. i. Khim. (High Molecular Compounds and Information), Moscow, 1973, 15, 1, 100; English translation, 1974, 15, 1, 100.

Chemical Sciences

Y. A. Golovinskiy, D. Z. Isakov, M. I. K. Chepur, E. G. K.
Lysakova, and V. I. Komolotov, Institute of Geochemistry and Analytical
Chemistry, Moscow, 1973, 256 pages, 20
copies, 1 r 97 k.

Obzorgbenyeno byudnykh iuzh (Concentration of Pressures), Collection of Materials. Scientific Council for Physical and Chemical Problems of Mineral Concentration, Moscow, 1972, 196 pages, 1100 copies, 1 r. 05 k.

M. S. Gribukh, Bookbinder's Polyethylene and other polymers
get into the Reaction Surface During Heterogeneous Combustion.
Institute of Physicochemical Principles of the Processing of
Mineral Raw Material, Siberian Department. Novosibirsk, 1973.
200 pages, 1450 copies, 1 r. 23 k.

Protsessy vzaimnoy diffuzii v splavakh (Processes of Mutual Diffusion in Alloys). Moscow, 1973, 360 pages, 3500 copies, 2 r 01 k.

Radiatsionnaya khimiya polimerov (Radiation Chemistry of Polymers). Collective Monograph. Scientific Council for the Chemistry of High Energies, Moscow, 1973, 454 pages with 121, 2100 copiers, 3 r 25 k.

Struktura splavov tsirkoniya (Structure of Zirconium Alloys)
Collective of Authors. Institute of Metallurgy, Akad. A. A. Bay-
kov, Moscow, 1973, 209 pages with ill., 1200 copiers, 1 r. 72 k.

Surlino-Velmut (Anthony-Bismuth). Collection of Antelope.
Moscow, 1973, 748 pages with 111. 35,000 copies. 25,000 copies.
1 r. 01. k.

Titanium baryle (Barium Titanate). Collection of Articles. Scientific Council for the Complex Problem "Physics and Chemistry of Semiconductors". Moscow, 1973, 264 pages with ill., 1500 copies, 2 r. 57 k.

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June 6, 1906

30 Nov. 74

Went to school, "Mad. 5518"
#19 school 27

23 July 1954

1/2 011

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--EXTRACTION OF COMPLEX ACIDS WITH OXYGEN CONTAINING DILUENTS. XIII.
EXTRACTION OF POLONIUM, II AND IV, FROM SOLUTIONS OF HYDRIODIC ACID -U-
AUTHOR-(02)-IOFA, B.Z., YUSHCHENKO, A.S.

COUNTRY OF INFO--USSR

SOURCE--RADIOKHIMIYA 1970, 12(1), 65-9

DATE PUBLISHED-----70

I

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--COMPLEX COMPOUND, OXYGEN, BROMIDE, KETONE, IODIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3005/0152

STEP NO--UR/0186/70/012/001/0065/0069

CIRC ACCESSION NO--AP0132438

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0132438

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE EXTN. OF PO(IV) FROM AQ. HI SOLNS. BY DIPROPYL KETONE (I) OR AMYL ACETATE (II) THE DISTRIBUTION COEFF. D 1ST DECREASES AND THEN INCREASES WITH INCREASING HI CONCN. C SUBHI IN THE AQ. PHASE (BETWEEN 0.1 AND 4.0 MOLE-L.), WITH A MIN. AT C SUBHI EQUALS 0.7 MOLE-L.; THE VALUES OF D FOR THE EXTN. WITH I (FOR II IN PARENTHESES) FROM 0.1, 0.7 AND 4.0 M HI SOLNS. ARE 250, 55, AND 280 (7.3, 1.7, AND 25), RESP. IN THE EXTN. OF PO(IV) BY N-HEXYL ALC. (III) D 1ST DECREASES, THEN INCREASES, AND AGAIN DECREASES WITH INCREASING C SUBHI; SAMPLE VALUES AT C SUBHI EQUALS 0.1, 0.5, 3.0, AND 4.5 MOLE-L. ARE 79, 35, 77, AND 53.5, RESP. IN THE EXTN. OF PO(II) FROM AQ. HI SOLNS. BY I, II, OR III THE D-C SUBHI RELATION IS IN ALL CASES THE SAME (BUT THE ABS. VALUES OF D ARE SOMEWHAT SMALLER) AS IN THE CASE OF PO(IV); IN THE EXTN. OF BOTH PO(IV) AND PO(II) BY BU SUB2 O, D PASSES THROUGH A MIN. (AT C SUBHI EQUALS 0.5-0.7 MOLE-L.) WHEN C SUBHI IS INCREASED FROM 0.1 TO 4.5 MOLE-L., BUT IN ALL CASES THE BAS. VALUES OF D ARE VERY LOW (BETWEEN 0.003 AND 0.1). THE MIN. ON THE D-C SUBHI CURVES ARE ATTRIBUTED TO THE PRESENCE OF 2 DIFFERENT PO COMPLEXES IN THE WEAKLY ACID SOLNS.: POI SUB3 PRIME NEGATIVE AND POI SBU4 PRIME2 NEGATIVE FOR DIVALENT PO, AND POI SUB5 PRIME NEGATIVE AND POI SUB6 PRIME2 NEGATIVE FOR TETRAVALENT PO; ONLY POI SUB4 PRIME2 NEGATIVE OR POI SUB6 PRIME2 NEGATIVE ARE STABLE IN MORE CONCD. HI SOLNS. THE PARTIAL FORMATION CONSTS. OF THE HIGHER IODIDE COMPLEXES OF DIVALENT AND TETRAVALENT PO ARE BETA PRIMEII EQUALS 130 AND BETA PRIMEIV EQUALS 403, I.E., THE IODIDE COMPLEXES ARE MORE STABLE THAN THE RESP. CHLORIDE AND BROMIDE COMPLEXES.

UNCLASSIFIED

USSR

UDC 541.135.5-183.546

BATRAKOV, V. V., BATRAKOVA, YU. A., and IOFA, Z. A., Moscow State University
imeni M. V. Lomonosov

"Effect of Mechanical and Thermal Treatments of Iron on the Efficiency of
Corrosion Inhibitors"

Moscow, Elektrokhimiya, Vol 7, No 7, Jul 71, pp 1012-1014

Abstract: The previously discovered dependence of adsorptive capacities of iron on the preliminary preparation of specimens (deformation, annealing) was investigated with a view to determine the effect of this factor on the efficiency of corrosion inhibitors. Experimental data show that the corrosion rate of iron in a pure acid solution is lower, but this dissolution rate in the presence of inhibitors is higher on specimens annealed at 750°C than on specimens annealed at 600°C. Corrosion tests of plates of Armco and zone melting iron annealed at 800°C. and on specimens deformed by a 5% elongation revealed that the dissolution rate (in 1 N H₂SO₄) of annealed specimens was considerably lower than that of previously deformed specimens. The dissolution rate seems to be related to the growth of surface energy as a result of increased concentration of defects of the crystalline lattice. The corrosion behavior of individual single crystal faces of iron silicate (Si ≈ 3%) was also investigated and the results are analyzed. One illustr., two tables, six biblio. refs.

1/1

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1/2 020 UNCLASSIFIED PROCESSING DATE--020CT70
TITLE--INCREASE IN THE INHIBITOR ACTION OF KATAPIN ON THE CORROSION OF
IRON IN SULFATE SOLUTIONS -U-
AUTHOR--(02)-HASSAN, S.F., IGFA, Z.A.

COUNTRY OF INFO--USSR

SOURCE--ZASHCH. METAL. 1970, 6(2), 231-3

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--IRON CORROSION, CORROSION INHIBITOR, SULFATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0750

STEP NO--UR/0365/70/006/002/0231/0233

CIRC ACCESSION NO--AP0111943

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--02JCT70

CIRC ACCESSION NO--AP0111943

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW AND EXTENSION OF PAPERS BY I. CONCERNING THE USE OF KATAPIN AND THE USE OF NA SUB2 S, KI, OR SULFOSALICYLIC ACID) (SSA) IN THE INCREASE OF THE INHIBITION INDEX. THE ADSORBED FILM CAPACITY APPLIED VOLTAGE AMPLITUDE (800 HZ) IN N H SUB2 SO SUB4 SHOWED PROGRESSIVE DISPLACEMENT BY THE COUNTER ADSORPTION OF ISO PR DERIV. OF KATAPIN AND THE TENDENCY TO CONTINUOUS KATAPIN FILMS ABOVE CONCNS. OF 0.25 G-L.; FURTHER INFLUENCE BY 10 PRIME NEGATIVE3 N NA SUB2 S AT THE 0.25 G-L. LEVEL GAVE THE INHIBITION INDEX (GAMMA) OF 290 VS. THOSE FOR 10 PRIME NEGATIVE2 M SSA OF 130, OR 2 TIMES 10 PRIME NEGATIVE4 N KI OF 210, OR THE INITIAL VALUE OF 110. THE SUBSTITUTION OF ISO PR KATAPIN FOR THE ME DERIV. GAVE LOWER, AND THE ET HIGHER GAMMA VALUES. COMPLETE INHIBITION WAS NOT OBTAINED OWING TO THE ALWAYS INCOMPLETE FILMING.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--ABSORPTION OF HALOGEN IONS ON NICKEL IN ACID SOLUTIONS AS INDICATED
BY THE IMPEDANCE MEASURING METHOD -U-
AUTHOR-(02)-MIKHAYLOVA, E.I., IOFA, Z.A.
COUNTRY OF INFO--USSR
SOURCE--ELEKTROKIMIYA, FEB. 1970, 6, (2), 231-234
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--NICKEL, METAL ELECTRODE, COBALT, BIBLIOGRAPHY, HALOGEN, ION,
CHEMISORPTION, ADSORPTION, BROMINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0300 STEP NO--UR/0364/70/006/002/0231/0234
CIRC ACCESSION NO--AP0124059
UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0124059
ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT. THE ADSORPTION OF HALOGEN IONS ON
A NI ELECTRODE IN ACID SOLUTIONS (H SUB2 SO SUB4 WITH VARIOUS ADDITIVES)
WAS STUDIED AND COMPARED WITH ANALOGOUS EFFECTS ON OTHER METALS, USING
IMPEDANCE MEASUREMENTS AS AN INDICATION OF THE PROCESSES TAKING PLACE.
IN THE CASE OF BR PRIME NEGATIVE, FOR EXAMPLE, FOR A NEGATIVE CHARGE ON
THE SURFACE OF THE ELECTRODE WEAK ADSORPTION OCCURRED, WHILE FOR A
POSITIVE CHARGE THIS WAS REPLACED BY CHEMISORPTION. CHANGES IN THE
STRUCTURE OF THE DOUBLE ELECTRIC LAYER ACCOMPANYING THE CHEMISORPTION OF
HALOGEN ANIONS AIDED THE ADSORPTION OF ORGAINC CATIONS ON NI IN THE
SAME WAY AS ON FE AND CO.

UNCLASSIFIED

1/2 C24 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--NEW FINDINGS ON THE DISTRIBUTION OF CIRCADIAN RHYTHMS IN PLANTS,
OSCILLATIONS OF BIOLOGICAL CLOCKS --U-
AUTHOR--(C2)--GUREVICH, B.K.H. IUFFE, A.A. I

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, BOTANICHESKIY ZHURNAL, NO 1, 1970, PP 77-81

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PLANT PHYSIOLOGY, CIRCADIAN RHYTHM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO--FD70/605019/F06 STEP NO--UR/0319/70/000/001/0077/C081

CIRC ACCESSION NO--AP0140984

UNCLASSIFIED

Phytology

USSR

UDC 581.183

I
GUREVICH, B. KH. and IOFFE, A. A., Scientific Research Institute of
Agricultural Physics, Leningrad

"New Findings on the Distribution of Circadian Rhythms in Plants
(Oscillations of 'Biological Clocks')"

Leningrad, Botanicheskiy Zhurnal, No 1, 1970, pp 77-81

Abstract: In his book Die physiologische Uhr (1958), E. Bunning main-
tains that the "biological clocks" in higher plants function uniformly
in each cell, so that a plant in this respect should be regarded as a
homogeneous cellular continuum. On the basis of some evidence in the
literature and the results of experiments with the photoperiodically
sensitive *Perilla ocymoides* and the photoperiodically neutral *Phaseolus*
vulgaris, it was argued that the set of "clocks" makes up a hierarchical,
multilevel system. It was found that the oscillations of the "clocks"
spread from the leaf to the petiole, from one leaf to another, and
from the petiole to the stem, from one story of leaves to another,
from the aerial parts to the underground parts, i.e., the oscillations
travel throughout the plant from tissue to tissue or from organ to
1/2

USSR

GUREVICH, B. KH., et al., Leningrad, Botanicheskiy Zhurnal, No 1,
1970, pp 77-81

organ. With respect to the general physiological significance of the oscillations, it is tentatively suggested that they may convey information on the ontogenetic development of an organ, and effects on the neighboring organs. Whether or not this information is used by the plant is not known.

2/2

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USSR

UDC 519.3

IOFFE, A. D. (Moscow)

"Convex Functions Connected With Variational Problems and the Absolute Minimum Problem"

Moscow, Matematicheskii Sbornik, Vol 88, No 2, Jun 72, pp 194-210

Abstract: The questions touched on in the present article are connected with V. F. KROTOV's hypothesis concerning necessary conditions for the absolute minimum in problems in the calculus of variations. The author's approach reduces the problem to proving the existence of a subdifferential for some convex function connected in a certain way with the problem. To illustrate the basic idea the article considers the problem of the minimum of a function.

Let X be a set, f a real-valued function on X , g a mapping of X into another set Y . It is assumed that it is necessary to minimize $f(x)$ provided that $g(x) = y_0$, where $y_0 \in Y$ is fixed. Let $\{x_m\}$ ($m = 1, \dots$) be an arbitrary admissible sequence (i.e., $g(x_m) = y_0$). In order for it to be minimizing, it is sufficient that there exist a function φ on Y such that

1/5

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USSR

IOFFE, A. D., Matematischeskiy Sbornik, Vol 88, No 2, Jun 72, pp 194-210

$$\varphi(g(x)) - f(x) \leq 0, \quad x \in X, \quad \lim [\varphi(g(x_m)) - f(x_m)] = 0. \quad (1)$$

If, on the other hand, assuming that $\{x_m\}$ is a minimizing sequence, it is proved that there exists a function φ which satisfies conditions (1), a necessary condition will thereby be obtained which interlocks with the sufficient condition and thus is strongest.

How can the existence of such a function be proved? Assume that $S(y) = \inf_{x: \varphi(x)=y} f(x)$. Then conditions (1) are equivalent to the following:

$$S(y) \geq \varphi(y), \quad y \in \varphi(X), \quad S(y_0) = \varphi(y_0). \quad (2)$$

USSR

IOFFE, A. D., Matematicheskiy Sbornik, Vol 88, No 2, Jun 72, pp 194-210

Consider the space \mathcal{F}' of formal linear combinations of points Y ,

$$\mathcal{F}' = \left\{ \xi = \sum_{i=1}^k a_i(y_i), a_i \in R, y_i \in Y, k < \infty \right\}.$$

Any real-valued function ψ on Y defines on \mathcal{F}' a linear functional acting according to the formula

$$\langle \psi, \xi \rangle = \sum a_i \psi(y_i).$$

Let us assume

3/5

- 9 -

USSR

IOFFE, A. D., Matematicheskiy Sbornik, Vol 88, No 2, Jun 72, pp 194-210

$$F(\xi) = \begin{cases} \sum \alpha_i S(y_i), & \text{if } \alpha_i \geq 0, y_i \in g(x), \\ \infty & \text{otherwise} \end{cases}$$

and $\xi_0 = 1 \cdot (y_0)$. Then from (2) it follows that

$$F(\xi) \geq \langle \varphi, \xi \rangle \text{ for any } \xi \in \mathcal{F}', \quad F(\xi_0) = \langle \varphi, \xi_0 \rangle. \quad (3)$$

The function F is convex and positively homogeneous on \mathcal{F}' . Therefore (3) denotes that φ is a subgradient of F at the point ξ_0 . Thus, proof of existence requires verifying that the subdifferential $\partial F(\xi_0)$ is nonempty.

The article constructs an analog of function F for problems in the calculus of variations and proves its subdifferentiability in classes of arbitrary and continuous functions φ . The author begins with a statement of the problem, constructs functions analogous to the function φ , formulates fundamental theorems, develops the technical apparatus necessary to study the function F and prove the fundamental theorems, and concludes with the proof itself.

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USSR

IOFFE, A. D., Matematicheskiy Sbornik, Vol 88, No 2, Jun 72, pp 194-210

The author's findings were reported in a paper by him and V. M. Tikhomirov at the All-Union Conference on Optimal Control and Minimal Surfaces in Tbilisi, September 1969.

5/5

- 10 -

USSR

ACCESSION NR: AP4002977

S/0286/63/000/018/0072/0072

AUTHOR: Ioffe, A. I.; Cherkasov, Ye. P.; Kostin, V. N.

TITLE: Device for temperature-error compensation in pressure-measuring instruments. Class 42, No. 157541

SOURCE: Byul. izobret. i tovarn. znakov, no. 18, 1963, 72

TOPIC TAGS: temperature error compensation, temperature error, error compensation, pressure measurement, pressure gage, manometer, manometry, manometer error

ABSTRACT: This Author Certificate introduces a device for temperature-error compensation in pressure gages with elastic sensing elements. The device consists of a bridge circuit with a thermal resistance in one arm. To increase the compensating accuracy, a stepped voltage divider is incorporated in the crossarm and the slide of the divider is connected with the sensing element of the pressure gage. Orig. art. has: 1 figure.

Card 1/3

ACCESSION NR: AP4002977

ASSOCIATION: none

SUBMITTED: 20Feb62

SUB CODE: SD

DATE ACQ: 13Dec63

NO REF SOV: 000

ENCL: 01

OTHER: 000

Card 2/3

ACCESSION NR: AP4002977

ENCLOSURE: 01

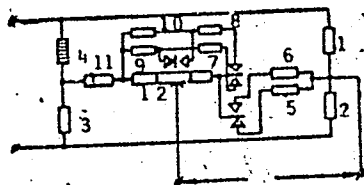


Fig. 1. Device for temperature-error compensation in pressure measuring instruments

1—3 - Bridge arms; 4 - thermal resistance;
5—12 - stepped voltage divider.

Card 3/3

ACCESSION NR: AP4041935

S/0286/64/000/012/0097/0097

AUTHOR: Ioffe, A. I.; Rubanov, I. N.; Fridlender, G. O.

TITLE: Aircraft vertical velocity measuring device. Class 42,
No. 163441

SOURCE: Byul. izobr. i tovar. znakov, no. 12, 1964, 97

TOPIC TAGS: aircraft vertical velocity, velocity variometer, variometer, altimeter

ABSTRACT: This Author Certificate introduces a vertical-velocity measuring device (see Fig. 1 of the Enclosure), consisting of a liquid-filled variometer in which a spring has been mounted between the bellows and the sensor of the altimeter in order to reduce inertia effects of the device. Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 28Jul62

ATD PRESS: 3051

ENCL: 01

SUB CODE: AC

NO REF SOV: 000

OTHER: 000

Card 1/2

ACCESSION NR: AP4041935

ENCLOSURE: 01

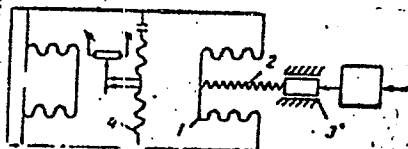


Fig. 1. Device for measuring vertical velocity

1 - Bellows; 2 - spring; 3 - screw;
4 - sensor of altimeter.

Card 2/2

83056

S/019/60/000/010/020/057
A151/A029

9.6000

AUTHORS: Voronin, A.N., Ioffe, A.F., Maslovkovets, Yu.P., Petrov, B.A.,
and Shmelev, G.I.

TITLE: A Thermal Element Having a Positive Electrode Made From an Inter-
Metal Antimony-Zinc Compound, and a Negative Electrode Made From
Lead Sulfide

PERIODICAL: Byulleten' izobreteniy, 1960, Nr 10, p 29
Class 21b, 27⁰³. Nr 128518 (362371/24 of Mar 6, 48). Sub-
mitted to the Board for Inventions and Discoveries of the
Gostekhnika USSR.

TEXT: 1. A thermal element as specified in the title. It has the
following special features: to increase the electric conductivity of the
positive electrode, keeping at the same time its heat conductivity at a
low magnitude, also to ensure a good tinning, lead and bismuth are intro-
duced into the material of the electrode. 2. A variant of the method
indicated in 1. It has the following special features: to increase the

Card 1/2

83056

S/019/60/000/010/020/057

A151/A029

A Thermal Element Having a Positive Electrode Made From an Inter-Metal Antimony-Zinc Compound, and a Negative Electrode Made From Lead Sulfide

service life of the thermal element (without raising the transition resistance between its electrodes), lead sulfide is preliminarily tinned with lead, bismuth or antimony in a reducing medium at 700-800°C.

4

Card 2/2

8(1)

S/019/60/000/04/137/315
D038/D006

AUTHOR: Ioffe, A. F.

TITLE: A Thermal Battery,^A

PERIODICAL: Byulleten' izobreteniy, 1960, Nr 4, p 30 (USSR)

ABSTRACT: Class 21g, 35. Nr 126202 (421277/24 of 19 August 1949). A thermal battery with a vacuum between a system of hot and cold electrodes, in which thermoelectric current is produced by the emission of electrons from a hot cathode with low output.

VB

Card 1/1

8(1)

S/019/60/000/04/094/315
D038/D006

AUTHOR: Ioffe, A.F.

TITLE: A Thermoelectric Battery₂

PERIODICAL: Byulleten' izobreteniy, 1960, Nr 4, p 22 (USSR)

ABSTRACT: Class 21b, 2701. Nr 126159 (421278/24 of 19 August 1949). A thermoelectric battery with high-temperature parts consisting partly or entirely of materials with high electrolytic conductivity. The purpose is to raise its efficiency. ✓

Card 1/1

C2d.R

ES.R

EH.R

C2.R

C2aa.R

IOFFE, A.F.

Oct. 1, 1952

Affil.: Laboratoriya Poluprovodnikov Akademii Nauk SSSR.

Title: A.F. Ioffe is an active member of the Acad. of Sciences of the SSSR

Public.: K otsenke teploprovodnosti poluprovodnikov.

Source: Doklady Akademii Nauk 87. 3. 1952. pp. 369-372.

F-1236

S/019/61/000/018/006/073

A152/A126

AUTHORS: Khocheyan, Kh.Ye.; Azbel', D.S.; Izffe, A.E.; Mah, N.Ye.

TITLE: A method for simultaneously obtaining phthalic acids and chloroform

PERIODICAL: Byulleten' izobreteniy, no. 18, 1961, 16

TEXT: Class 12c, 14. No. 141149 (681301/23 of October 6, 1960). A method for simultaneously obtaining phthalic acids and chloroform, differing from other methods in that the isomeric bis-(trichloroacetyl benzenes) or an industrial mixture thereof are heated together with aqueous alkali solutions, whereupon the acids are separated by known methods.

Card 1/1

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SOV/19-59-9-37/362

AUTHORS: Khcheyan, Kh.Ye., Ioffe, A.E.

TITLE: A Method of Obtaining Phenylene Diacetic Acids and Their Diamides

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 9, p 16 (USSR)

ABSTRACT: Class 12o, 12. Nr 119528 (608044 of 20 September 1958). The method is based on the interaction of the corresponding diacetylbenzenes with nitrous bases; polysulfides of ammonia are used as the latter. 2) The process is carried out in an organic solvent.

Card 1/1

I

USSR

UDC 534.222

BOGUSLAVSKIY, YU. YA., IOFFE, A. I., NAUGOL'NYKH, K. A., Acoustics
Institute of the USSR Academy of Sciences

"Radiation of Sound by a Cavitating Region"

Moscow, Akusticheskiy Zhurnal, Vol 16, No 1, 1970, pp 20-24

Abstract: Based on an approach suggested by Lighthill for estimating noises of hydrodynamic origin, an equation describing radiation of sound by cavitating streams of liquid has been derived. The intensity of the cavitation component of noise was calculated for the case when the noise can be considered as the aggregate of pulses with random amplitudes and times of approach to the observation point, and also for the case of weak pulsations of cavitating bubbles.

The Lighthill equation:

$$\frac{\partial^2 \rho}{\partial t^2} - c^2 \Delta \rho = \frac{\partial^2 T_{ij}}{\partial x_i \partial x_j}$$

$$T_{ij} = \rho v_i v_j + P_{ij} - c^2 \delta_{ij} \rho' \quad (1)$$

1/2

USSR

BOGUSLAVSKIY, YU. YA., et al., Akusticheskiy Zhurnal, Vol 16, No 1, 1970, pp 20-24

(ρ = density of medium and v = hydrodynamic velocity), reduces the problem of radiation of sound by a stream to the acoustic problem of a field produced in a homogeneous medium by spatially distributed sources of pressure.

This equation is also used for the cavitating region -- a liquid with gas bubbles, where ρ stands for the effective density of this medium.

$$\rho = \rho_K / (1+z) \quad (2)$$

where ρ_K = density of liquid, $z = (4/3) n(R^3 - R_0^3)$, n = number of bubbles per unit volume, R = radius of bubble, R_0 = its initial value; thus, z = volume of all bubbles per unit volume of liquid.

1/2 018 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--RADIATION OF SOUND BY A CAVITATING REGION -U-
AUTHOR-(03)-BOGUSLAVSKIY, YU.YA., IOFFE, A.I., NAUGOLNYKH, K.A.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, AKUSTICHESKIY ZHURNAL, VOL 16, NO 1, 1970, PP 20-24
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS
TOPIC TAGS--MATHEMATIC MODEL, CAVITATION NOISE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1876 STEP NO--UR/0046/70/016/001/0020/0024
CIRC ACCESSION NO--AP0106543
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106543

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BASED ON AN APPROACH SUGGESTED BY LIGHT HILL FOR ESTIMATING NOISES OF HYDRODYNAMIC ORIGIN, AN EQUATION DESCRIBING RADIATION OF SOUND BY CAVITATING STREAMS OF LIQUID HAS BEEN DERIVED. THE INTENSITY OF THE CAVITATION COMPONENT OF NOISE WAS CALCULATED FOR THE CASE WHEN THE NOISE CAN BE CONSIDERED AS THE AGGREGATE OF PULSES WITH RANDOM AMPLITUDES AND TIMES OF APPROACH TO THE OBSERVATION POINT, AND ALSO FOR THE CASE OF WEAK PULSATIONS OF CAVITATING BUBBLES. THE LIGHTHILL EQUATION: EQUATION SHOWN ON MICROFICHE, (ρ EQUALS DENSITY OF MEDIUM AND V EQUALS HYDRODYNAMIC VELOCITY), REDUCES THE PROBLEM OF RADIATION OF SOUND BY A STREAM TO THE ACOUSTIC PROBLEM OF A FIELD PRODUCED IN A HOMOGENEOUS MEDIUM BY SPATIALLY DISTRIBUTED SOURCES OF PRESSURE. THIS EQUATION IS ALSO USED FOR THE CAVITATING REGION, A LIQUID WITH GAS BUBBLES, WHERE ρ STANDS FOR THE EFFECTIVE DENSITY OF THIS MEDIUM. ρ EQUALS $\rho_{\text{SUBK}} \cdot (1 + Z)$ (2) WHERE ρ_{SUBK} EQUALS DENSITY OF LIQUID, Z EQUALS $(4 - 3) N(R \text{ PRIME}^3 - R \text{ PRIME}^3 \text{ SUBO})$, N EQUALS NUMBER OF BUBBLES PER UNIT VOLUME, R EQUALS RADIUS OF BUBBLE, $R \text{ SUBO}$ EQUALS ITS INITIAL VALUE; THUS, Z EQUALS VOLUME OF ALL BUBBLES PER UNIT VOLUME OF LIQUID. FACILITY: ACOUSTICS INSTITUTE OF THE USSR ACADEMY OF SCIENCES.

UNCLASSIFIED

USSR

UDC 669.71:669.046.517

ESKIN, G. I., SHVETSOV, P. N., and IOFFE, A. I., Moscow

"On the Relationship Between Cavitation and Degassing During Ultrasonic Treatment of Aluminum and Magnesium-Containing Aluminum Alloys"

Moscow, Akademiya Nauk SSSR. Izvestiya. Metally, No 6, Nov-Dec 72, pp 69-74

Abstract: It is shown experimentally and theoretically that effective ultrasonic degassing of molten aluminum and magnesium-containing aluminum alloys requires treatment in a regime of developed cavitation. A dependence of the threshold of cavitation in molten aluminum and magnesium-containing aluminum alloys on the concentration of solid nonmetallic impurities is shown, a fact which leads to an assumption that propagation of cavitation in molten metal is realized on nonwetttable solid impurities of the Al_2O_3 type. The analysis of the results of experimental and analytical investigations shows that under the conditions of cavitation regime treatment ($P_{33} \gg 10$ atm abs.) cavitation cavities, approximately equal in size to solid impurities, multiply rapidly (hundred- and thousand-fold) and gas pressure in them decreases to 10^{-8} atm (abs.). This leads to formation of relatively large gas blowholes due to rectified diffusion that leaves the melt or as a result of collapse lead to multiplication of cavitation nuclei in molten metal.

1/1

Hematology

USSR

UDC 615.362.018.46.014.41

MIKHAYLOV, V. G., and IOFFE, A. L., Laboratory for Tissue Preservation, Uzbek Institute of Hematology and Blood Transfusion, Tashkent

"Some Problems in Connection With the Preservation of Bone Marrow with Polyvinylpyrrolidone at -40° "

Moscow, Problemy Gematologii i Perelivaniya Krovi, No 10, 1971, pp 53-55

Abstract: The diameter of erythroblasts, myelocytes, and segmentonuclear neutrophils shrinks after 2 hours of incubation with polyvinylpyrrolidone (PVP) because of partial dehydration. The viability of myelokaryocytes after 10 minutes of contact with PVP is comparatively low in frozen preparations (79%). But it increases markedly (92 to 95%) when the time of contact is lengthened to 4 hours. Fewer cells possessing normal mobility and intact structure but insufficiently dehydrated before freezing are restored after thawing. The viability of thawed myelokaryocytes increases with increasing degree of dehydration as a result of longer incubation with PVP. Transplantation of bone marrow preserved at -40° with PVP to nine patients with advanced cancer helped to restore hematopoiesis which had been depressed by large doses of cytostatic agents.

1/1

UDC 669.295:537.533.35

USSR

KOMAROVA, M. F., BUYNOV, N. N., IOFFE, A. YA., KAGANOVICH, L. I., and GAVRILOVA, A. B., Institute of Metal Physics, USSR [expansion unknown] Academy of Sciences USSR

"Effect of Small Additions of Beryllium, Titanium, and Zirconium on the Structure and Properties of AL9 Alloy"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 1, 1973, pp 140-148

Abstract: Metallographic and electron microscopic studies were conducted and the mechanical properties of AL9 alloy, alloyed with Be, Ti, and Zr, determined. The hypoeutectic alloy has the following composition (in %): 7 Si, 0.3 Mg, 0.015 Cu, 0.1 Zn, and 0.25 Fe with varying small amounts of the alloying elements. Results of analysis showed that the small amounts of Be, Ti, and Zr, taken in limits from 0.001 to 0.1% (separately or together) do not alter the nature of the eutectic in the alloy, its quantity and silicon particle size in the eutectic or the size of the solid solution nucleus between the eutectic colonies. Investigation in the work of alloying showed changes in the kinetics of decomposition of the supersaturated solid solution, acceleration of the formation of the metastable beta'-phase and silicon particles, and refining of the particles and an increase in their number. These factors promoted increased alloy strength where joint alloying increased this strength by 30-40%. Six figures, 13 bibliographic references. 1/1

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USSR

I

UDC 621.373.444

ASTAPOV, N. T., and IOFFE, A. YA.

"A Device for Producing a Random Voltage Distributed According to a Predetermined Law"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 3, 1970, p 128, patent No 260285, filed 5 Nov 68

Abstract: This Author's Certificate introduces a device for producing random voltage distributed according to a predetermined law. The unit contains a NOT circuit, a delay unit, a pulse train generator, and a nonlinear converter. As a distinguishing feature of the patent, the device is simplified by making the nonlinear converter in the form of a sweep oscillator with a sweep which varies according to a law which is the inverse of the function of the predetermined distribution. The output of the nonlinear sweep-oscillator converter is connected to the input of the NOT circuit, the blocking input of the NOT circuit is connected to the output of the pulse counter, and the inputs of the pulse counter and the nonlinear sweep-oscillator converter are connected in parallel to the output of the pulse train generator.

1/1

USSR

UDC: 621.9.05-229.64

IOFFE, B. A., LAPIDUS, M. Kh., and FREYS, V. V. [Physics Institute, Latvian Academy of Sciences]

"Device for Sorting Nonmagnetic Bodies Asymmetrical in Electrical Conductivity"

Avt. sv. SSSR, kl. B 23 d 33/02, No 312322, zayavl. 25.12.66, opubl. 26.01.72 (Author's Certificate, USSR, class B 23 d 33/02, No 312322, claimed 25 December 1968, published 26 January 1972) (from RZh--Avtomatika, telemekhanika i vychislitel'naya tekhnika, No 2, 1973, Abstract No 2A485P)

Translation: A device is proposed for sorting nonmagnetic bodies which are asymmetrical in electrical conductivity and located in a pulsed magnetic field formed by an electromagnet creating a concentrated magnetic flux. Two illustrations.

1/1

USSR

UDC 547.772.2'388:541.634:543.544:542.953.4

IOFFE, B. V., BURMANOVA, N. B., Leningrad State University imeni
A. A. Zhdanov

"Isomer Composition of Pyrazolines Obtained From Unsaturated
Carbonyl Compounds and Hydrazine"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 9, Sep 71,
pp 1225-1229

Abstract: The authors studied the isomer composition of pyrazo-
lines which form in the cold from hydrazine hydrate and unsaturated
carbonyl compounds C_4H_6O - $C_6H_{10}O$ (crotonaldehyde and tiglaldehyde,
 α -methyl-, α -ethyl- and α -methyl- β -ethylacroleins, methyl
vinyl ketone, methyl isopropenyl ketone and mesityl oxide). It
was found that only 3-alkyl-substituted pyrazolines obtained from
unsaturated ketones are structurally homogeneous, containing no
 Δ^1 -pyrazolines or Δ^2 -pyrazolines with a different position of
side chains with respect to the C=N bond which might have been
formed as a result of migration of the latter. On the other hand,
in reaction mixtures during condensation of some unsaturated
1/ 3

- 38 -

USSR

IOFFE, B. V., et al, Khimiya Geterotsiklicheskikh Soyedineniy,
No 9, Sep 71, pp 1225-1229

aldehydes with hydrazine hydrate, along with the principal product (Δ^2 -pyrazoline of the corresponding structure) there appear appreciable quantities of Δ^1 -pyrazoline, as well as isomeric 3-substituted Δ^2 -pyrazolines. Since the initial unsaturated aldehydes did not contain impurities, the presence of isomers can be explained by the comparatively easy isomerization of Δ^2 -pyrazoline into the Δ^1 -isomer with subsequent conversion to 3-alkyl- Δ^2 -pyrazoline. This isomerization is catalyzed by bases, therefore the quantity of isomers depends on the time and mode of reaction mixture treatment. The rate of isomerization of pyrazolines apparently depends on their structure and the absence of isomeric impurities in the 3-alkyl- Δ^2 -pyrazolines obtained from the ketones is probably due to their much higher thermodynamic stability and very low isomerization rate. As a result, Δ^2 -pyrazolines with a side chain in position 3 are readily obtained in pure form from the corresponding unsaturated ketones. Stereoisomeric pyrazolines can form in two of the above reactions. Results of gas-chromatographic analysis and NMR spectra of the condensation products of

2/3

USSR

IOFFE, B. V., et al, Khimiya Geterotsiklicheskikh Soyedineniy,
No 9, Sep 71, pp 1225-1229

hydrazine with tiglaldehyde and α -methyl- β -ethylacrolein show
that they contain mixtures of cis and trans isomers.

3/3

- 39 -

Acc. Nr:

AP0053420

Abstracting Service

CHEMICAL ABST.

5/70

Ref. Code:

U.R0366

110853z Preparation of cyclopropane hydrocarbons by the catalytic decomposition of 2-pyrazolines. Isidorov, V. A.; ~~Isidorov, B. V.~~ Stolvarov, B. V. (Leningrad Gos. Univ., Leningrad, USSR). *Zh. Org. Khim.* 1970, 6(2), 398-9 (Russ). The pyrolysis of Δ^2 -pyrazolines (I), contg. 3,5,5-Me₃, 4-Et, 3,5-Me₂, 4,5-Me₂, or 5,5-Me₂ substituents, at 400° gave $\leq 68\%$ total products contg. cyclopropanes and $\leq 56\%$ (based on product wt.) olefins. At 300°, the product distribution was the same, but the total yields were 10-25% lower. Heating I in diethylene glycol at 230-60° gave NH₃(g), but no hydrocarbons. CPJR

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REEL/FRAME
19830444

7

1/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--DIALKYLHYDRAZONES OF ALPHA,ALKYL,BETA,CHLOROACROLEINS AND THEIR
CONVERSION TO DIALKYLAMINOACRYLONITRILES -U--
AUTHOR-(03)-ZELENIN, K.N., IOFFE, B.V., ZELENINA, N.I.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(6), 1354-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HYDRAZONE, ORGANIC NITRILE COMPOUND, CHLORINATED ORGANIC
COMPCUND, NMR SPECTRUM, AMINE, INTRAMOLECULAR MECHANICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/1090

STEP NO--UR/0020/70/190/006/1354/1357

CIRC ACCESSION NO--AT0124747

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0124747

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CLCR PRIME2:CR PRIME1 CHO AND AN
EQUIMOLAR AMT. H SUB2 NNR SUB2 .HCL (OR ACOH) CONDENSED IN MECH
OVERNIGHT GAVE (FORMULAS SHOWN ON MICROFICHE). THE REARRANGMENT
REQUIRED USUALLY 10-24 HR. NMR SPECTRAL DATA WERE GIVEN.
FACILITY: VCENNO-MED. AKAD. IM. KIROVA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--REACTIONS OF ACETYLENIC CHLORIDES WITH HYDRAZINES. V. REACTION OF
4,CHLORO,2,PENTYNE WITH HYDRAZINE -U-
AUTHOR-(05)-LUFFE, B.V., ARTSYBASHEVA, YU.P., LEVINA, L.M.
COUNTRY OF INFO--USSR
SOURCE--ZH. ORG. KHIM. 1970, 6(5), 908-11
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CYCLIZATION, CHLORINATED ORGANIC COMPOUND, ORGANIC AZO
COMPOUND ALKYNE, HYDRAZINE, CHEMICAL SYNTHESIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1334 STEP NO--08/0366/70/006/035/0708/0911
CIRC ACCESSION NO--AP0135008
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0135005

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE TITLE REACTION GAVE LESS THAN OR EQUAL TO 80PERCENT 3,5-DIMETHYL, DELTA PRIME2, PYRAZOLINE, A SMALL AMT. OF 3-ETHYL, DELTA PRIME2, PYRAZOLINE, AND TRACES OF NLC(:NNH SUB2) CH:CHME (1). THE REACTION INVOLVES THE INITIAL FORMATION OF MECH(:NNH SUB2)C TRIPLE BOND CBE, WHICH REARRANGES PREDOMINATELY TO A SUB2 C:CHC(:ANN SUB2) ET AND IN A LESSER DEGREE TO 1. THE CYCLIZATION OF THESE INTERMEDIATES GIVES THE PRODUCTS. FACILITY: LENINGRAD. GOS. UNIV., LENINGRAD, USSR.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ROLE OF CARBENIUM IONS DURING THE ALKYLATION OF BENZENE BY
CYCLOPROPANE HYDROCARBONS -U-
AUTHOR-(03)-STOLYAROV, B.V., SIDEROV, V.A., IOFFE, B.V.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(2), 369-72

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ALKYLATION, BENZENE, CYCLOPROPANE, PHOSPHORIC ACID, ALUMINUM
CHLORIDE, CATALYST, BUTANOL, PHENOL, CHEMICAL REACTION RATE, CHEMICAL
REACTION MECHANISM, ISOMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/0571

STEP NO--UR/0020/70/191/002/0369/0372

CIRC ACCESSION NO--AT0126316

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--ATO126316

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ALKYLATION OF C SUB6 H SUB6 IN THE PRESENCE OF 96PERCENT OR 80PERCENT H SUB2 SO SUB4, POLYPHOSPHORIC ACID, OR ALCL SUB3 IN MEND SUB2 WAS RUN WITH CUM. CYCLOPROPANE AND WITH VERY PURE CYCLOPROPANES WITH 1-ME, 1,1,ME SUB2, OR 1,2,ME SUB2 SUBSTITUENTS, AS WELL AS ETHYLCYCLOPEOPANE AND 1,1,2,TRIMETHYLCYCLOPROPANE. THE REACTION RESULTS OBTAINED IN 40-80DEGREES INTERVAL WERE TABULATED AND COMPARED WITH ALKYLATIONS RUN WITH PROH, 2,BUTANOL, 2,METHYL,2, BUTANOL, 3,PENTANOL AND 2,2DIMETHYL,3,BUTANOL. THE COMPN. OF THE ALKYL BENZENES WAS TABULATED OVER A RANGE OF EXPTL. CONDITIONS; ON THE WHOLE THE OCMPN. WAS SIMILAR FOR HYDROCARBON (CYCLOPROPANE) OR ALC. SOURCE OF THE ALKYLATING GROUP. THE ONLY MATERIAL DIFFERENCES WERE FOUND BETWEEN THE RUNS WITH CYCLOPROPANE OR METHYLCYCLOPROPANE ON THE ONE HAND, AND WITH PROH OR 2,BUTANOL ON THE OTHER. ELEVATION OF TEMP. OR INCREASED DURATION MERELY INCREASED THE YIELDS OF ALKYL BENZENES, BUT NOT THE RATIOS OF INDIVIDUAL PRODUCTS. IN ALL REACTIONS WITH CYCLOPROPANE THE PRODUCTS WERE COMPOSED OF PRPH, ISO-PRPH AND 2-20PERCENT MEETCHPH; ETHYLCYCLOPROPANE SIMILARLY GAVE PRODUCTS WITH 8-10PERCENT TERT,AMYL BENZENE; ALKYLATIONS WITH CYCLOPROPANE HYDROCARBONS GAVE APPRECIABLE AMTS. OF PRODUCTS WITH BOTH FEWER AND MORE C ATOMS IN THE SIDE CHAIN THAN NORMALLY EXPECTED. THE INITIAL PRODUCTS APPEAR TO BE CARBO CATIONS FROM CYCLOPROPANES WHICH THEN CAN ISOMERIZE BY TRANSFER OF THE POS. CHARGE DOWN THE CHAIN PRIOR TO ALKYLATION PROPER. ETHYLCYCLOPROPANE GAVE 3 ISOMERS OF PENTYL BENZENES TO CONFIRM THIS MECHANISM. FACILITY: LENINGRAD. GOS. UNIV. IM. ZHDANOVA, LENINGRAD, USSR.

UNCLASSIFIED

Acc. Nr.

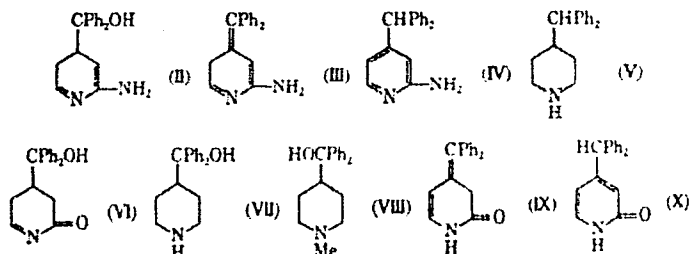
AFO100328

Abstracting Service:
CHEMICAL ABST.

Ref. Code

UN 0409

111246r Reductive metalation of carbonyl compounds. X. Reaction of the disodium derivative of benzophenone with 2-bromopyridine. Ioffe, D. V. (USSR). *Khim. Geterotsikl. Soedin.* 1970, (1), 50-4 (Russ). Ph_2CO di-Na deriv. (I) reacts with 2-bromopyridine in liq. NH_3 to give not 2-(diphenylhydroxymethyl)pyridine, but 2-amino-4-(diphenylhydroxymethyl)-4,5-dihydropyridine (II). To 0.92 g Na in 100 ml liq. NH_3 were added 3.64 g Ph_2CO in Et_2O 1.6 g 2-bromopyridine in 15 ml



Et_2O to give 1.5 g II, m. 90° (C_6H_6). To a suspension of 0.25 g II in 10 ml H_2O was added a few drops 10% HCl and the mass heated to boiling to give 0.1 g VI, m. 264° (EtOH); the acidic layer was made alk. to give 0.1 g III, m. $197-8^\circ$ (PhMe). III.HCl m. $249-50^\circ$ ($\text{EtOH-Et}_2\text{O}$). III (1 g) in 20 ml 10% HCl was boiled 5 hr to give 0.8 g IV, m. 168° (C_6H_6). To 0.9 g IV in 20

REEL/FRAME
19841738

AP0100328

ml EtOH was added an equiv. of alc. HCl, the mixt. hydrogenated over 0.2 g PtO₂ till 300 ml H was absorbed, and the product shaken with 3 ml Me₂CO to obtain 0.6 g V.HCl, m. 278° (EtOH-Et₂O) from which was isolated V, m. 100-1° (hexane). VI (0.9 g) in 30 ml C₆H₆ was added to 0.5 g LiAlH₄ in Et₂O to give 0.7 g VII, m. 160° (C₆H₆). VII (0.2 g) in 3 ml 90% HCO₂H and 3 ml 40% aq. HCHO gave VIII, m. 135° (hexane). 1-Methyl-4-chloropiperidine (0.7 g) was added to I in liq. NH₃ (prepd. from 0.9 g Ph₂CO) to give 0.1 g VIII. VI (0.8 g), boiled 20 min in 5 ml AcOH and 1 ml concd. HCl gave IX, m. 200-1° (C₆H₆). IX (0.5 g) in 5 ml AcOH and 2 ml concd. HCl gave 0.4 g X, m. 207° (C₆H₆). Also, to 0.5 g IV in 100 ml H₂O and 1 ml concd. H₂SO₄ was added 0.5 g NaNO₂ to give 0.4 g X. Also, bromonaphthalene was reduced by I. A similar reaction takes place with 2-bromopyridine. I with 3-bromopyridine gave, in addn. to Ph₂CO and benzhydrol, a mixt. of 3- and 4-(diphenylhydroxymethyl)pyridines. Ir spectra are discussed.

S. K. Banerjee

muw

19841739

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EFFECT OF IRON II SALTS ON THE EXTRACTION OF COPPER II WITH
TRIOCTYLAMMONIUM CHLORIDE FROM CHLORIDE SOLUTIONS --U--
AUTHOR--(03)-IOFFE, E.SH., SHALYGINA, YE.M., ROMAZANOVA, I.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(1), 187-9

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--METAL CHEMICAL ANALYSIS, CHLORIDE, AMMONIUM COMPOUND, IRON,
COPPER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1996/1900

STEP NO--UR/0075/70/025/001/0187/0189

CIRC ACCESSION NO--AP0118862

UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0118862
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CU(II) EXTN., IN THE PRESENCE OF
FE(III) IN A LiCl SOLN., WITH A SOLN. OF TRIOCTYLAMMONIUM CHLORIDE IN
XYLENE WAS STUDIED. THE DISTRIBUTION COEFF. E FOR CU INCREASES WITH
INCREASING FE(III) CONCN. THE LINEAR DEPENDENCE BETWEEN LOG E AND LOG
(FE) IS 1. WITH A CHLORIDE EXCESS IN THE PRESENCE OF FE(III), CU(II) IS
REDUCED TO CU(I), WHICH IS READILY EXTG. FACILITY: STATE
SCI.-RES. DES. INST. GIPRONIKEL, LENINGRAD, USSR.

UNCLASSIFIED

IOFFE G.I.

Acc. Nr.: AN0104123

Ref. Code: 209003

TITLE-- ANNOUNCEMENT OF THE COMMITTEE ON LENIN AND STATE PRIZES, U.S.S.R. 49

NEWSPAPER-- IZVESTIYA, MAY 28, 1970, P 4, COLS 1-5

ABSTRACT-- NINETY ONE BASIC AND APPLIED RESEARCH WORKS HAVE BEEN NOMINATED FOR THE STATE PRIZES. TWO OF THESE, "THE MULTI-PURPOSE INDUSTRIAL HELICOPTER KA-26", BY N. I. KAMOV, V. B. ALPEROVICH, V. B. BARSHEVSKIY, A. A. DMITRIYEV, G. I. IOFFE, M. A. KUPFER, L. A. POTASHNIK, N. N. PRIOROV, A. G. SATAROV, I. M. VEDENEV, S. B. BREN, AND V. A. NAZAROV, AND "THE DEVELOPMENT OF TURBOFAN JET ENGINES NK-8 AND NK-8-4, AND THE DEVELOPMENT AND REDUCTION TO SERIAL PRODUCTION A SYSTEM OF TECHNOLOGICAL PROCESSES WHICH ASSURED WIDE USES FOR TITANIUM ALLOYS", BY N. D. KUZNETSOV, M. T. VASILISHIN, V. A. KURGANOV, P. M. MARKIN, V. D. RADCHENKO, P. A. SUKHOV, A. A. MUKHIN, V. G. SHITOV, G. I. MUSHENKO, L. A. SHKODO, AND G. P. DOIGOLENKO, HAVE BEEN SUBMITTED BY THE MINISTRY OF THE AVIATION INDUSTRY.

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Reel/Frame
19870555

Acc. Nr.: ANO104123

"A SERIES OF INVESTIGATIONS INTO THE DYNAMICS OF A BODY WITH FLUID-FILLED CAVITIES", /65-68/, BY N. N. MOISEYEV, A. A. PETROV, V. V. RUMYANTSEV, AND F. L. CHERNOUSKO AND "ULTRA HIGH PRECISION JIG BORING MILLS WITH 1,000 X 1,600 AND 1,400 X 2,240 MM PLATEMILLS", BY A. I. KIRYANOV, V. G. ABRAMOVICH, I. V. GUTKIN, A. S. ALIMPIYEV, G. B. PAUKOV, AND A. S. YEGUDKIN, HAVE BEEN SUBMITTED BY THE COMPUTATION CENTER OF THE ACADEMY OF SCIENCES AND THE MINISTRY OF THE MACHINE TOOL CONSTRUCTION AND TOOL INDUSTRY, RESPECTIVELY.

"THE RADICALLY IMPROVED MELTING TECHNOLOGY OF CRITICAL-PURPOSE HIGH-ALLOY STEELS AND ALLOYS OF IMPROVED QUALITY ACHIEVED BY THE INERT GAS TREATMENT OUTSIDE THE FURNACE", BY YU. V. GERASIMOV, O. M. CHEKHOMOV, N. V. SIDOROV, S. K. FILATOV, B. A. CHEREMNYKH, R. M. KHAYRUTDINOV, I. P. BARMOTIN, L. K. KOSYREV, K. P. BAKANOV, N. N. VLASOV, P. I. MELIKHOV, AND N. A. TULIN, HAS BEEN SUBMITTED BY THE ZLATOUST METALLURGICAL PLANT.

2/2

Reel/Frame

19870556

KZ

1/2 008 UNCLASSIFIED ~~7~~ PROCESSING DATE--18SEP70
TITLE--INTENSIFIED PREPARATION OF WHITE ENAMELS IN BEAD MILLS -U-

AUTHOR--(05)-ZAKHARYCHEV, V.P., IOFFE, G.S., NEVZOROV, E.N., MIRONOV, B.V.,
YERMILOV, P.I.

COUNTRY OF INFO--USSR

SOURCE--LAKOKRASOCH. MATER. IKH. PRIMEN. 1970 (1) 74

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--INDUSTRIAL PRODUCTION, ENAMEL, TITANIUM OXIDE, VARNISH,
UREA/(U)MCH181 ENAMEL, (U)MCH025 VARNISH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0546

STEP NO--UR/0303/70/000/001/0074/0074

CIRC ACCESSION NO--AP0107151

UNCLASSIFIED

2/2 008 UNCLASSIFIED PROCESSING DATE--18SEP70
CIRC ACCESSION NO--AP0107151
ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT. A RHEOL. METHOD WAS DEVELOPED FOR
THE DETN. OF THE OPTIMUM TIO SUB2-ALKYD UREA MCH025 VARNISH RATIO DURING
THE PRODUCTION OF MCH181 ENAMEL (I) IN BEAD MILLS. THE OUTPUT OF THE
BEAD MILLS INCREASED BY A FACTOR OF 2.23 WHEN THE OLDER FORMULATION WAS
REPLACED BY THE I FORMULATION DEVELOPED FROM RHEOL. DATA.

USSR

UDC 911.3.616.9.576.895.42(42+57)

BABENKO, L. V., NAUMOV, R. L., USPENSKIY, I. V., MERINOV, V. A., RUBINA, M. A., VASIL'YEVA, I. S., IOFFE, I. D., OBLESOVA, L. N., and RAZUMOVA, I. V.

"A Biological Study of Ixodes Ticks -- Disease Vectors -- and a Scientific Study of Countermeasures in Natural Foci"

V sb. Materialy Nauchn. konferentsii, posvyashch. 50-letiyu In-ta med. parazit. i tropich. med., 1970 (Proceedings on the Conference Commemorating the 50th Anniversary of the Institute of Medical Parasitology and Tropical Medicine 1970 -- collection of works), Moscow, 1970, pp 52-53 (from RZh-36. Meditsinskaya Geografiya, No 1, Jan 71, Abstract No. 1.36.67)

Translation: This study has four objectives: a) study of the ecology and population biology of the prevalent Ixodes and Dermacentor tick species; b) complex study of biological laws in natural foci of tickborne encephalitis and in one focus of Asian tickborne rickettsiosis (in Krasnoyarskiy Kray); c) study and practice of countermeasures against tickborne encephalitis for residents of large, newly-constructed housing developments in the hill rayons of Krasnoyarskiy Kray; and d) study of the effect of pesticides on ticks (*I. persulcatus*, for example). A proposal is advanced for research on the

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USSR

BABENKO, L. V., et al, V sb. Materialy Nauchn. konferentsii, posvyashch. 50-letiyu In-ta med. parazitol. i tropich, med., 1970 (Proceedings on the Conference Commemorating the 50th Anniversary of the Institute of Medical Parasitology and Tropical Medicine 1970 -- collection of works), Moscow, 1970, pp 52-53 (from RZh-36. Meditsinskaya Geografiya, No 1, Jan 71, Abstract No 1.36.67)

characteristics of the population biology, morphology, and physiology of ticks within various geographic conditions.

2/2

IOFFE, I. G.

Acoustics

UNDERWATER COMMUNICATIONS AND TONED EQUIPMENT

Selected translations from the Russian-language periodical
Sovetskoye Radio, No. 29, 1972. (Soviet Publishing House, Moscow)
Assigned to print 17 January 1972. pp 26-40, 40-47.

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JPRS 57125
27 September 1974

(1 - USSR - 2)

1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--HYDROGENATION OF SUCCINIMIDE TO 2-PYRROLIDINONE. I. SOLVENT EFFECT
ON THE CATALYTIC REDUCTION OF SUCCINIMIDE -U-
AUTHOR-(03)-YEVGRASHIN, V.M., IOFFE, I.I., YAKUSHKIN, M.I.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (3), 355-8

DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CATALYTIC HYDROGENATION, NICKEL, DIOXANE, BUTANOL, SUCCINIC
ACID, AMIDE, SOLVENT ACTION, PYRROLIDINE, KETONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--2000/0981

STEP NO--UR/0409/70/000/003/0355/0358

CIRC ACCESSION NO--AP0124640

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0124640
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE TITLE COMPD. (I) WAS
HYDROGENATED AT 230DEGREES-200 ATM WITH 1:6:0.1 I SOLVENT RANEY NI. THE
HIGHEST CONVERSIONS WERE OBTAINED IN DIOXANE (60.5PERCENT) AND IN BUOH
(56.8PERCENT) AFTER 120 MIN. FACILITY: VSES. NAUCH.-ISSLED.
INST. NEFTEKHIM. PROTSSESS., LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC 669.187.2

MALINOVSKIY, YE. I., IOFFE, I. M., CHERNENKO, V. V., and TROYAN, S. G.,
Ukrainian Scientific Research Institute of Special Steels

"Quality of a Structural Steel Produced Using Silicon-Containing Tailings"
Moscow, Stal', No 9, Sep 73, pp 808-809

Abstract: The authors melted a structural steel type 25KhSNVFA having a sulfur and phosphorus content less than or equal to 0.010 and 0.015%, respectively, in a 60-ton electrofurnace using silicon-containing tailings and partial oxidation of the bath with oxygen. It was found that in the remelting of the alloyed tailings (containing Si, W, etc.) the removal of P and nonmetallic inclusions is hindered without boiling but this shortcoming can be compensated by an argon blow in the ladle (8-10 minutes per consumption of 0.25-0.5 m³/t of steel and a metal temperature of 1590-1610° C prior to the blow). With the use of 50-70% alloyed tailings in the charge, steel type 25KhSNFA, containing less than 0.015% P was produced by this technology. Without the refining argon-gas blow of the required level the purity of the steel, as to nonmetallic inclusions, cannot be achieved. V. I. MORDVINTSEV, I. S. PASYNKOV, V. P. POTATOVA, and M. I. GRINER Participated in this work. Two tables, six bibliographic references.

1/2 016
UNCLASSIFIED
TITLE--RHODAMINE DYES AND RELATED COMPOUNDS. XVIII. N,N
PRIME, DIALKYL RHODAMINES WITH LONG CHAIN HYDROCARBON RADICALS -U-
AUTHOR--(02)-IOFFE, I.S., SHAPIRO, A.L.
PROCESSING DATE--0200T70
COUNTRY OF INFO--USSR
SOURCE--ZH. ORG. KHIM. 1970, 6(2), 369-71
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--DYE, AMINE DERIVATIVE, MOLECULAR STRUCTURE, HETEROCYCLIC
OXYGEN COMPOUND, OPTIC PROPERTY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0215
CIRC ACCESSION NO--AP0113154
STEP NO--UR/0365/70/006/002/0369/0371
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0113154

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONDENSATION OF I (X EQUAL CL) WITH R_{NH} SUB2 (R EQUAL C SUB6 H SUB13, C SUB8 H SUB17, C SUB16 H SUB33, OR C SUB18 H SUB37) GAVE THE TITLE DYES (I, X EQUAL NHR) (II). THE PRESENCE OF ALKYL GROUPS IN II DID NOT CHANGE THEIR COLOR IN COMPARISON WITH II (R EQUAL H); ALL II ABSORBED STRONGLY AT 523-6 NM. HOWEVER, LONG ALKYL CHAINS ALTERED THE HYDROPHOBIC PROPERTIES OF II AS SHOWN BY THE CHANGE OF THEIR PARTITION COEFFS. IN OIL ALC. OR KEROSENE ALC. SYSTEMS WITH THE LENGTH OF R CHAIN.

UNCLASSIFIED

1/2 009
TITLE--BETA PHENYLHYDRAZONE OF ALPHA BETA DIOXOBUTYRIC ACID AND ITS
TRANSFORMATIONS -U-
AUTHOR-(02)-IOFFE, I.S., KRYUKOVA, L.M.
COUNTRY OF INFO--USSR
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2), 403-6
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--HYDRAZONE, KETONE, BUTYRIC ACID, PYRAZOLE, POLYNUCLEAR
HYDROCARBON
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3006/1486
CIRC ACCESSION NO--AP0135149
STEP NO--UR/0079/70/040/002/0403/0406
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--27NOV79

CIRC ACCESSION NO--AP0135149

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.

1,PHENYL,3,METHYL,4,5,DIOXOPYRAZOLINE (IA) DISSOLVED IN 10PERCENT NAOH, FILTERED AND ACIDIFIED WITH HCL, GAVE A GRADUALLY SOLIDIFYING OIL, WHICH GAVE 41PERCENT PHNHN:CMCOCO SUB2 H (I), M. 123DEGREES. WHEN THIS WAS CRYSTD. FROM AQ. ME SUB2 CO IT GAVE YELLOW PHNHN:CMC (CO SUB2 H):NNHPPH(II), M. 196-7DEGREES, WHILE ITS MOTHER LIQUOR ON STANDING 3 DAYS GAVE 1,PHENYL,3,METHYLDIOXOPYRAZOLINE,4,5,DIONE,4,PHENYLHYDRAZONE, M. 153-4DEGREES. I IN AQ. ETOH TREATED AT 40DEGREES WITH PHNHNH SUB2 AND 50PERCENT ACOH GAVE 93PERCENT II. HOLDING 1,PHENYL,3,METHYL,4,5,DIOXOPYRAZOLINE 4,THIOSEMICARBAZONE (III) IN 0.5N NAOH 2 HR AT 65DEGREES GAVE, ON ACIFIFICATION, 76.5PERCENT PHNHN:CMC(CO SUB2 H):NNHCSNH SUB2 (IV), M. 219DEGREES. I AND THIOSEMICARBAZIDE IN AQ. ETOH GAVE A SOLID, M. 170-7DEGREES, CONTG. BOTH III AND IV. II IN ALC. HCL 1 DAY GAVE 21PERCENT 1,PHENYL,3,METHYL,4,5,PYRAZOLINEDIONE 4,PHENYLHYDRAZONE, ALSO FORMED FROM II AND AQ. ALC. HCL 1 DAY. IA IN AQ. ETOH ACOH GAVE, WITH THIOSEMICARBAZIDE, 81PERCENT 1,PHENYL,3,METHYL,4,5,DIOXOPYRAZOLINE 4,THIOSEMICARBAZONE, DECOMPD. 224-5DEGREES, ALSO FORMED FROM IV BY HEATING WITH AQ. ALC. ACOH. I HEATED 1 HR IN ACOH GAVE V, M. 184-5DEGREES, ALSO FORMED FROM I HEATED TO ABOVE ITS M.P. OR FROM IA HEATED WITH ACOH NH SUB4 OH 1 HR.

UNCLASSIFIED

1/3 018 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--HETEROCYCLIC SEMICARBAZONES AND THIOSEMICARBAZONES. IX. CYCLIZATION
OF N,METHYLISATIN BETA,2,METHYLTHIOSEMICARBAZONE -U-
AUTHOR-(03)-IOFFE, I.S., TEMCHIN, A.B., RUSAKOV, E.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 682-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CYCLIZATION, KETONE, BROMINATED ORGANIC COMPOUND, BENZENE
DERIVATIVE, CHEMICAL SYNTHESIS, TRIAZINE, MERCAPTAN, PHOTOEFFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1181 STEP NO--UR/0079/70/040/003/0682/0689
CIRC ACCESSION NO--AP0128602
UNCLASSIFIED

2/3 018

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0128602

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. TO 96.5 G O,BRC SUB6 H SUB4 ME WAS ADDED OVER 2 HR AT 90DEGREES UNDER UV LIGHT 29 ML BR TO YIELD O,BRC SUB6 H SUB4 CH SUB2 BR, WHILE FURTHER ADDN. OF 29 ML BR IN 4 HR, HEATING TO 150DEGREES AND REFLUXING THE PRODUCT WITH H SUB2 O AND CACL SUB3 8 HR GAVE 34.5PERCENT O,BRC SUB6 H SUB4 CHO, B SUB9 99.5DEGREES. O,BROMOMANDELIC ACID OXIDIZED WITH KMNO SUB4 IN AQ. NAOH AT 10DEGREE GAVE 23PERCENT O,BRC SUB6 H SUB4 CO SUB2 H AND 43.6PERCENT O,BROMOPHENYLGLYOXYLIC ACID (I), M. 97-102DEGREES. O,BRC SUB6 H SUB4 COCN, M. 64DEGREES, FAILED TO REACT SATISFACTORILY WITH CU SUB2 (CN) SUB2 BUT, KEPT WITH CONCD. HCL 1 DAY THEN HEATED 1 HR, GAVE 42.8PERCENT I; THIOSEMICARBAZONE M. 219DEGREES. THE ACID AND 2,METHYLTHIOSEMICARBAZONE GAVE THE 2,METHYLTHIOSEMICARBAZONE (II), M. 156DEGREES; SIMILAR DERIV. OF O,NITROPHENYLGLYOXYLIC ACID M. 145DEGREES. II AND M NACH, REFLUXED 10 MIN, GAVE 83PERCENT 2,METHYL,3,MERCAPTO,5,HYDROXY,6,(2,BROMOPHENYL),1,2,4,TRIAZINE, M. 235.5DEGREES, WHICH DID NOT REACT WITH MENH SUB2 ALONE, WHILE WITH CU CATALYST REACTIONS OTHER THAN SUBSTITUTION TOOK PLACE. SIMILARLY WAS PREPD. 55PERCENT 2,METHYL,3,MERCAPTO,5,HYDROXY,6,(2,NITROPHENYL),1,2,4,TRIAZINE, M. 247.5DEGREES, WHICH WITH POWD. FE IN ALC. AQ. HCL GAVE 97.5PERCENT 2,METHYL,3,MERCAPTO,5,HYDROXY,6,(2,AMINOPHENYL),1,2,4,TRIAZINE, M. LARGER THAN 330DEGREES. SIMILARLY WAS PREPD. 3,MERCAPTO,5,HYDROXY,6,(2,AMINOPHENYL),1,2,4,TRIAZINE, M. ABOVE 300DEGREES.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

3/3 016

CIRC ACCESSION NO--AP0128602

ABSTRACT/EXTRACT--TREATMENT OF N,METHYLISATIN
BETA,(2,METHYLTHIOSEMICARBAZONE) WITH ALKALI GAVE NOT ONLY
3,9,DIMETHYL,2,3,DEHYDRO,1,3,4,TRIAZACARBAZOLE,2,THIONE, BUT ALSO
2,METHYL,3,MERCAPTO,5,HYDROXY,6,(2,(METHYLAMINO)PHENYL),1,2,4,TRIAZINE,
M. 211DEGREES.

UNCLASSIFIED

1/3 007 UNCLASSIFIED
TITLE--SEMICARBAZONES AND THIOSEMICARBAZONES OF HETEROCYCLES. X. MUTUAL ..
REACTIONS OF 1,3,4, TRIAZACARBAZOLES AND
AUTHOR--(02)-IOFFE, I.S., TOMCHIN, A.B.
COUNTRY OF INFO--USSR
SOURCE--Zh. OBSHCH. KHIM. 1970, 40(4), 859-62
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--POLYNUCLEAR HYDROCARBON, HETEROCYCLIC NITROGEN COMPOUND,
MERCAPTAN, TRIAZINE, ORGANIC AZOLE COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1484
CIRC ACCESSION NO--AP0129882
UNCLASSIFIED

2/3 007

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128882

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEATING 5 G
3,9-DIMETHYL,2,3-DIHYDRO 1,3,4,TRIAZACARBAZOLE,2, THIONE (IA) WITH 420
ML N NaOH 40-50 MIN GAVE 25PERCENT 2,METHYL,
3,MERCAPTO,5,HYDROXY,6,(2,METHYLAMINOPHENYL),1,2,4,TRIAZINE (I), M.
210DEGREES. HEATING 2,METHYL,3,MERCAPTO,5,HYDROXY,6,(2,
AMINOPHENYL),1,2,4,TRIAZINE WITH MEI IN MEOH IN A SEALED TUBE AT
140DEGREES GAVE A MIXT. FROM WHICH WAS ISOLATED SOME I, AS WELL AS
3,9-DIMETHYL,2,3-DIHYDRO 1,3,4,TRIAZA,2,CARBAZOLENE, M. 255DEGREES. THE
YIELDS OF THIS INCREASED WITH PROLONGATION OF THE REACTION AND ELEVATION
OF THE TEMP. HEATING 3,5-DIHYDROXY,6,(2,AMINO PHENYL) 1,2,4,TRIAZINE
(II) WITH 1:1 HCL IN A SEALED TUBE 5-10 HR AT 160DEGREES GAVE
2,HYDROXY,1,3,4,TRIAZACARBAZOLE, M. SMALLER THAN 320DEGREES. EVIDENTLY
IN REACTION OF ALKALI WITH N METHYLISATIN
BETA-(2,METHYL)THIOSEMICARBAZONE TO FORM
5-OXO-6,(2,AMINOPHENYL),1,2,4,TRIAZINE, THE 'CYCLIZATION TAKES PLACE
FIRST, THEN OPENING OF THE 1,3,4,TRIAZACARBAZOLE RING; SIMILAR REACTION
OF ISATIN BETA SEMICARBAZONE PROCEEDS THROUGH REVERSED ORDER OF THESE
STEPS. OPENING OF THE 1,3,4, TRIAZACARBAZOLE RING BY ALKALI OCCURS ONLY
IN DERIVS. OF 2,MERCAPTO AND 2,HYDROXY,1,3,4,TRIAZACARBAZOLE, IN WHICH
THE QUINOIDAL FORM IS FIZED BY METHYLATION AND MESOMERIC ION FORMATION
IS EXCLUDED. ALTHOUGH CYCLIZATION OF 5 OXO 6 (2,AMINOPHENYL),1,2,4,
TRIAZINES TO FORM 1,3,4,TRIAZACARBAZOLE DERIVS. FROM REACTION OF AMINO
GROUP ON THE BENZENE RING WITH THE CARBONYL GROUP OF THE TRIAZINE RING
IS POSSIBLE DURING CLEAVAGE OF 1,3,4,TRIAZACARBAZOLES, THE REACTION
PROCEEDS ONLY WITH MUCH DIFFICULTY.

UNCLASSIFIED

3/3 007

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128882

ABSTRACT/EXTRACT--II HEATED IN MECH THF WITH DICYCLOHEXYLCARBODIIMIDE,
ZNCL SUB2 OR P SUB2 O SUB5 IN ME SUB2 SO FAILED TO YIELD
TRIAZACARBAZOLES.

UNCLASSIFIED

USSR

GUREVICH, L. E., and IOFFE, I. V., Physicotechnical Institute imeni A. F. Ioffe, Academy of Sciences USSR, Leningrad

"Waves Created in a Conducting Medium by the Photoelectric Effect"

Leningrad, Fizika Tverdogo Tela, Vol 13, No 1, Jan 71, pp 131-134

Abstract: As an electromagnetic wave passes through a crystal, a constant electric field appears in the conductor proportional to the Poynting vector of this wave. The wave also creates new waves, whose frequency at $H_0 < c/\mu+$ (c the velocity of light, $\mu+$ carrier mobility) is linear on the wave vector and at $H_0 > c/\mu-$ is close to the frequency of helicoid waves. The present article limits itself to the case of an exciting wave frequency ω much less than the collision frequency τ^{-1} . The result of the presence of additional waves in the crystal is that when two waves are simultaneously incident on the crystal, with the first wave creating an electric field of sufficient magnitude, the second wave of lower frequency may pass through the crystal practically without damping. In addition, when the crystal which is in the strong magnetic field is struck by a wave which leads to the excitation of additional "photoelectric" waves, "combination" waves emerge from the crystal with the frequencies $\omega = p\omega$ ($p = 1, 2 \dots$).

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USSR

GUREVICH, L. E., and IOFFE, I. V.

"Excitation of Coupled Magnetic and Transverse Sound Vibrations in Metals and Semimetals"

Leningrad, Fizika Tverdogo Tela, Vol 13, No 2, February 1971, pp 644-645

Abstract: In a previous paper by the same authors [Fizika Tverdogo Tela, Vol 13, No 2, 1970] it was shown that increasing transverse oscillations of an electromagnetic field occur in semimetals and metals in a magnetic field on incidence of a sufficiently strong electromagnetic wave. In the present article it is shown that with a further increase in intensity of the incident wave coupled electromagnetic and elastic oscillations are excited. The case is limited to normal incidence of the wave and parallelness of the Poynting vector of the incident wave, the external magnetic field, and the wave vector of the excited oscillations.

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USSR

HURWITZ, L. E., IOFFE, I. V., and KULIYEV, Sh. L. (Joffe Physics-Engineering Institute of the USSR Academy of Sciences, Leningrad)

"Perturbation, by a Strong Current, of Shortwave Surface Galvanomagnetic and Acoustical-Magnetic Waves"

Leningrad, Fizika Tverdogo Tela, February 1971, pp 569-572

Abstract: When a strong current is passed through a conducting medium, transverse oscillations of the electromagnetic field or related oscillations of the field and lattice occur. If the wave vector in the direction of the external current j_0 is much greater than the opposite transverse dimension of the crystal, then these waves are exponentially damped out in the depth of the crystal and can be considered as surface waves. The magnetic field of these oscillations is much greater than the electrical, and the frequency is equal to $k v$, where v is the drift rate and k is the wave vector; $k \parallel j_0$.

Conditions for the perturbation of such oscillations in the presence, and absence, of an external magnetic field are found.

The article includes 7 equations. There are 4 bibliographic references.
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1/2 030

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--EXTERNAL CIRCUIT CURRENT OSCILLATIONS IN A SEMICONDUCTOR WITH
KADOMTSEV NEDOSPASOV INSTABILITY -U-

AUTHOR--(03)-GUREVICH, L.B., ~~IOFFE~~ I.V., TURSONOV, A.A.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1566-8

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SOLID STATE CIRCUIT, SEMICONDUCTOR CRYSTAL, CURRENT DENSITY,
OSCILLATION, ELECTRIC FIELD, INDIUM ANTIMONIDE, ELECTRIC IMPEDANCE

CENTRAL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3004/0578

STEP NO--UR/0181/70/012/005/1566/1568

CIRC ACCESSION NO--AP0131465

UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0131465

ABSTRACT/EXTRACT--(U) GP-G- ABSTRACT. INTERACTION OF FLUCTUATIONS LEADS
IN NONOHMIC CONTACTS TO VARIATIONS OF THE REAL PART OF THE CRYSTAL
IMPEDANCE. NUMERICAL EVALUATIONS OF THE FIELDS AND FREQUENCIES WERE
CARRIED OUT FOR INSB AT 77DEGREESK. FACILITY: FIZ.-TEKH. INST.
IN. IOFFE, LENINGRAD, USSR.

1/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--THEORY OF RADIATION EMISSION FROM CRYSTALS TRAVERSED BY A CURRENT
-U-
AUTHOR--(02)-GUREVICK, L.E., IOFFE, I.V. **I**
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 6, PP 2047-2053
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--INDIUM ANTIMONIDE, MAGNETIC FIELD EFFECT, INORGANIC CRYSTAL,
MICROWAVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/2226

STEP NO--UR/0056/70/058/006/2047/2053

CIRC ACCESSION NO--AP0125804

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125804

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LINEAR AND NONLINEAR THEORIES ARE DEVELOPED FOR MICROWAVE EMISSION FROM CRYSTALS TRAVERSED BY A CURRENT IN THE ABSENCE OR PRESENCE OF AN EXTERNAL MAGNETIC FIELD PARALLEL OR PERPENDICULAR TO THE CURRENT. THE SITUATION ENCOUNTERED IN EXPERIMENTS ON MICROWAVE EMISSION FROM INDIUM ANTIMONIDE IS CONSIDERED. IN A CURRENT CARRYING CONDUCTING MEDIUM THERE EXISTS A SPECIAL BRANCH OF ELECTROMAGNETIC FIELD TRANSVERSE OSCILLATIONS WHOSE EXCITATION LEADS TO EMISSION. IN THE ABSENCE OF AN EXTERNAL FIELD THE FREQUENCY IS LINEAR RELATIVE TO THE WAVE VECTOR; IN A STRONG MAGNETIC FIELD AN ADDITIONAL TERM WHICH IS QUADRATIC WITH RESPECT TO THE WAVE VECTOR ARISES. THE FREQUENCY AND CRITICAL VALUE OF THE CURRENT DENSITY ARE DETERMINED AND FOUND TO AGREE WITH THE EXPERIMENTAL VALUES. THE DEPENDENCE OF OSCILLATION AMPLITUDE ON CURRENT DENSITY IS DEDUCED. THE RADIATION INTENSITY IS CALCULATED AND IT IS SHOWN THAT IN A STRONG EXTERNAL MAGNETIC FIELD IT INCREASES IN ACCORDANCE WITH THE EXPERIMENTS.

FACILITY: FIZIKO-TEKHNICHESKIY INSTITUT IM. A. F. IOFFE AN SSSR.

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